



ANNUAL REPORT  
OF THE  
COMMISSIONER'S OF INLAND FISHERIES  
1913

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*August 6, 1914.*





State of Rhode Island and Providence Plantations

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FORTY-FOURTH ANNUAL REPORT

OF THE

COMMISSIONERS OF INLAND  
FISHERIES

MADE TO THE

GENERAL ASSEMBLY

AT ITS

January Session, 1914

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PROVIDENCE, R. I.

E. L. FREEMAN COMPANY, STATE PRINTERS

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## COMMISSIONERS OF INLAND FISHERIES.

CHARLES W. WILLARD, Westerly, *President*.

DANIEL B. FEARING, A. M., Newport, *Vice President*.

WILLIAM H. BOARDMAN, Central Falls, *Secretary*.

ADELBERT D. ROBERTS, Woonsocket, *Auditor*.

THEOPHILE GUERIN, Woonsocket, *Treasurer*.

WILLIAM P. MORTON, Providence.

ISAAC H. CLARKE, Jamestown.

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## DEPUTY COMMISSIONERS.

WILLIAM T. LUTH, Newport, *Chief Deputy*.

JAMES HARRINGTON, Newport.

JEREMIAH B. ALLEN, New Shoreham.

ANDREW V. WILLIS, New Shoreham.

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## SUPERINTENDENT OF HATCHERY AND EXPERIMENT STATION.

EARNEST W. BARNES, Wickford.





# REPORT

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*To the Honorable the General Assembly of the State of Rhode Island and Providence Plantations, at its January Session, 1914:*

The Commissioners herewith present their forty-fourth annual report, for the year 1913, which contains, as required by law, data and statistics with respect to the fisheries under their jurisdiction and such recommendations as they deem expedient.

The fisheries in general have been in a quite prosperous condition. Especially can this be said of the lobster industry. Not only has there been a marked increase in the number of pounds taken from the waters of the state, but there has also been a great increase in the average number of pounds per lobster pot. This gain is due largely to the persistent enforcement of the lobster laws and to the rearing of young lobsters at the State Hatchery at Wickford.

It is the sincere hope of your Commissioners that the laws regulating the general fisheries may be put in the same effective condition as those relating to the lobster industry. At present they are ambiguous, difficult to enforce and in many cases obsolete. Your Commission recommends that a committee be appointed from your honorable body to assist them in drawing up new laws which shall give the proper protection to these fisheries.

Considerable interest has been shown by sportsmen in this section of the country in the possibility of establishing rod and reel fishing for tuna in Block Island. Your Commission is very much interested in the matter and is doing all in its power to encourage it. More extended references to this valuable fishery is made on page 30 and following.

The work of the Commission has followed the usual lines as outlined below, more detailed statements will be found in the body of the report.

The stocking of fresh-water ponds and streams.

The enforcement of the laws relating to fresh-water fishes.

The purchase of egg-bearing lobsters.

The employment of deputies to enforce the lobster laws.

The rearing of lobsters to the bottom-seeking stages.

The gathering of data and statistics with respect to the food-fishes.

The coöperation with fisheries authorities of neighboring states and abroad.

Occasion is here taken to thank the New York, New Haven and Hartford Railroad Company for its courtesy in granting free transportation of fry and messengers.

The financial statement for the year 1913 is as follows:

*State of Rhode Island in account with the Commissioners of Inland Fisheries.*

DEBIT.

1913.

Dec. 31. To expenses of the Commissioners from January 1, to December 31, 1913. . . . .	\$838 20
To expenses and services of deputies under the law from January 1, to December 31, 1913. . . . .	3,491 80
To purchase of boat for deputies, 1913. . . . .	1,000 00
To expenses at the Wickford Hatchery and Experiment Station, January 1, to Decem- ber 31, 1913. . . . .	9,020 54
To purchase of Egg Lobsters. . . . .	1,707 40
	<hr/>
	\$16,057 94

## CREDIT.

1913.

Dec. 31. By received from the State Treasurer . . . . . \$16,057 94

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Amount received for 295 lobster licenses, at \$5.00 each,  
as per receipts from the State Treasurer . . . \$1,475 00

Respectfully submitted,

CHAS. W. WILLARD,  
DANIEL B. FEARING,  
WILLIAM H BOARDMAN, *Secretary*.  
ADELBERT D. ROBERTS,  
THEOPHILE GUERIN,  
WILLIAM P. MORTON,  
ISAAC H. CLARKE,

## STOCKING FRESH-WATER PONDS AND STREAMS.

The number of brook trout distributed by your Commission in 1913 was somewhat under normal owing to the extremely low state of the ponds and streams. The continuance of dry seasons accompanied by extensive deforestation has made it necessary for the Commission to exercise great care in distributing fish. Streams which were formerly well adapted for brook trout have become unsuitable because of high temperatures and low waters during the summer season.

In addition to brook trout a considerable number of white perch were put in suitable places last year. The majority of the fish were well filled with spawn and were liberated a short time prior to the spawning period.

The fishing in streams previously stocked by your Commission was quite successful in 1913, especially for large-mouthed black bass and trout. The latter owing to the abuses of excessive fishing and unfavorable seasons were not very plentiful, but those caught were unusually large. Fishing for large-mouthed black bass in the Pawcatuck and its tributaries was continued with increasing success.

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## THE COLLECTION OF DATA AND STATISTICS RELATING TO THE COMMERCIAL FISHERIES.

Every effort has been made to make this branch of the Commission's work reliable and trustworthy, but as mentioned in previous reports, the absence on our statute books of laws making returns compulsory has prevented us from making this data complete.

## GENERAL CONDITIONS OF THE FISHERIES IN 1913.

In general, the fishing in Narragansett Bay in 1913 was a little better than that of the previous year, but not above the average. Small scup and small butterfish were quite plentiful as in 1912. Trash

fish, such as are used as bait, were also quite abundant. Especially noteworthy was the fact that striped bass and young pollock were caught well up the Bay, a quite unusual thing for recent years.

Hand-line fishing, both within the Bay and off Newport, was well above the average, especially the tautog fishing off Newport. The first catch of these fish in Rhode Island waters was made in the fyke nets on April 2nd, but there were none caught by hand lines until April 19th.

In the off-shore traps the general fishing was excellent. This statement is especially true with reference to the scup fishing which was far ahead of any recent year, both in the length of run and the number of fish caught.

The following tables of the shipment of sea products from Newport are submitted as heretofore. The large gain in the number of fish shipped is due almost entirely to the extraordinary run of scup.

TABLE I.

*Table Showing the Amount of Fish, Lobsters, and Other Sea Products Shipped Monthly from Newport by the Principal Transportation Companies During the Year 1913.*

1913.	Barrels Fish.	Barrels Lobsters.	Barrels Crabs.	Barrels Oysters.	Number Sturgeons.	Number Sharks.	Barrels Horse-mackerel.	Barrels Clams.	Number Swordfish.	Barrels Mussels.
January.....	1,481½			32						13
February.....	1,959			24						75
March.....	1,074			21				3		20½
April.....	2,244½	2	1	15	1			2½		1
May.....	15,878	1½	2	2	6		5	7		
June.....	12,786½	177½	6	2	3	1	7	14	13	
July.....	3,904	796	4		1		6	34	36	
August.....	2,870½	766	8	1	1		3	6	11	
September.....	4,649	115		30			29	6		
October.....	3,854	107	4	30	2		4	4		
November.....	6,303	16	2	41	3	1				1
December.....	3,049	2½		495		3		3		34
Total, year 1913.....	60,053	1,983½	27	693	17	5	54	79½	60	144½

TABLE II.

*Table Showing Shipment of Fish, Lobsters, and Other Sea Products from Newport for the last Twenty-Seven Years.*

	Barrels Fish.	Barrels Lobsters.	Barrels Quahaugs.	Barrels Crabs.	Barrels Clams.	Barrels Spawn.	Barrels Sounds.	Number Sword-fish.	Number Sturgeons.	Number Horse-mackerel.	Barrels Turtles.	Number Sharks.	Number Porpoise.	Barrels Eels.	Barrels Oysters.	Conches.	Mussh.
1887...	16,657	834															
1888...	15,033	1,161															
1889...	19,306	2,047															
1890...	8,933	2,650															
1891...	18,032	2,204															
1892...	26,832	2,123															
1893...	24,452	1,399															
1894...	17,769	2,392															
1895...	24,622	2,119															
1896...	20,425	1,728						143									
1897...	52,098	2,039						45									
1898...	34,065	1,163						74									
1899...	34,917	4,143						162									
1900...	38,184	4,793						166									
1901...	50,500	4,393						21									
1902...	53,986	4,342		1				179									
1903...	54,384	1,474		84				164	11	79			18				
1904...	62,106	1,921		45	8			554		336							
1905...	50,127	977		122	80	3	23	723	26	91		1	1				
1906...	60,955	1,306½	233	17	15	2	6	811	11	40	2	12	1		112		
1907...	59,674	1,529		322	12	8	24	263	13	112	1	12			18		
1908...	48,814	2,517½		287	23		21	198	3	93	5	3					
1909...	46,031	3,252½		145	14		29	61	6	21		5			673		
1910...	53,154	427		112	58		5	38	17	47	5	37			794	42	5
1911...	39,141	2,281½		50	29		4	509	56	79	4½	32			726	71	1
1912...	56,325	1,465		38	33			321	14	67	2	16			980	255	38
1913...	60,053	1,983½		27	79½			60	17	54		5			693		144½
Total..	1,046,575	58,664½	233	1,250	351½	13	112	4,492	174	1,019	19½	123	2	18	3,996	368	188½

## THE LOBSTER INDUSTRY.

The early part of the lobster season was poor and continued so until the latter part of July, when remarkable catches were made. The total number of pounds of lobsters caught in Rhode Island waters in 1913 was, 1,210,094 pounds, nearly double that of 1912, and the average number pounds per pot increased from 43 to 69. This extraordinary increase in a well established fishery is attributed to the enforcement of the lobster laws and to the rearing of lobsters at the Wickford Hatchery. The fishermen have continued to report a great abundance of small lobsters, especially in those parts stocked by the Wickford Hatchery.

The following tables have been compiled from data furnished for the greater part by William T. Luth, Chief Deputy Lobster Commissioner. At the conclusion of these a list of the licensed lobster men is given as prescribed by law:

TABLE III.

*Table Comparing the Number of Pounds of Lobsters, Number of Pots, and Average Number of Pounds Per Pot, for the Years 1904-1913.*

YEAR.	Total Catch in Pounds.	Newport.	Number of Pots.	Average Number of Pounds Per Pot.
1904.....	376,994	226,994	7,935	45
1905.....	448,300	301,659	9,180	48
1906.....	671,914	353,573	11,355	59
1907.....	929,423	581,189	12,104	76
1908.....	1,471,344	665,009	20,011	73
1909.....	1,342,983	757,837	23,220	57
1910.....	833,683	489,815	22,091	37
1911.....	891,886	513,076	23,294	38
1912.....	745,257	372,726	17,259	43
1913.....	1,210,094	520,962	17,335	69



TABLE IV.

*The Number of Pounds of Lobsters Caught in Rhode Island for the Years 1904-1913.*

FISH MARKETS.	1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.
Newport (wholesale).....	147,494	179,427	245,860	472,575	524,746	572,705	351,675	390,702	219,076	332,362
Newport (retail).....	79,500	122,232	107,713	108,614	100,263	185,132	148,140	132,374	153,650	188,600
Sakonnet (wholesale).....	.....	97,641	163,341	193,243	191,218	191,731	67,038	63,000	55,618	51,779
Tiverton (wholesale).....	.....	.....	.....	.....	286,724	91,107	60,785	84,000	49,043	61,353
Block Island (wholesale).....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Narragansett Pier (wholesale).....	150,000	100,000	155,000	155,000	.....	.....	.....	.....	.....	.....
Watch Hill (wholesale).....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Point Judith (wholesale).....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Block Island (wholesale).....	.....	.....	.....	.....	248,330	236,000	160,300	159,000	196,000	376,000
Point Judith (wholesale).....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Watch Hill (wholesale).....	.....	.....	.....	.....	.....	66,318	54,800	92,810	71,870	100,000
Narragansett Pier (wholesale).....	.....	.....	.....	.....	.....	.....	.....	.....	.....	100,000
Other markets (not included in above.).....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	376,994	499,300	671,914	929,432	1,351,281	1,342,993	842,738	921,886	745,257	1,210,094

TABLE V.

*Number of Pots, Boats and Men Engaged in Lobster Fishing in the State of Rhode Island for 1913.*

LOCATION.	Men.	Boats.	Pots.
Block Island.....	72	38	5,450
Bristol.....	8	7	480
Charlestown.....	5	3	150
Hamilton.....	2	2	140
Jamestown.....	10	10	410
Little Compton.....	10	10	384
Middletown.....	5	5	260
Narragansett Pier.....	27	23	1,361
Newport.....	79	66	4,680
Peacedale.....	3	2	110
Portsmouth.....	4	4	175
Prudence Island.....	4	4	205
Saunderstown.....	7	5	287
Tiverton.....	10	10	462
Wakefield.....	13	8	626
Watch Hill.....	2	2	52
Warren.....	8	6	666
Westerly.....	13	11	880
Wickford.....	2	2	50
Other Places.....	11	9	502
Total.....	295	227	17,330

\*In addition to these a few boats were fishing just beyond the three-mile limit. The bulk of their lobsters were brought into Rhode Island.

*List of Lobster Licenses Granted in 1913.*

License No.	Name.	Location.
1.	Joseph L. Eaton.....	Saunderstown.
2.	Joseph L. Eaton, Jr.....	"
3.	Henry K. Littlefield.....	Block Island.
4.	Victor D. Gray.....	Tiverton.
5.	Samuel E. Gray.....	"
6.	William H. Dodge.....	Block Island.
7.	Louis E. Smith.....	"
8.	Earle A. Smith.....	"
10.	Arthur E. Dodge.....	"
11.	Prentice A. Lanphear.....	Westerly.
12.	Wilbur E. Dodge.....	Block Island.
14.	Nicholas Pnematikos.....	Newport.
15.	Albert W. Smith.....	Block Island.
16.	George E. Smith.....	"
17.	Simon A. Littlefield.....	"
18.	Alfred C. Littlefield.....	"
19.	Samuel R. Littlefield, 2nd.....	"
21.	John E. Littlefield.....	"
22.	Rouse B. Dodge.....	"
23.	Simon R. Sands.....	"
24.	Simon A. Ball.....	"
25.	Vernice Willis.....	"
26.	Johannes Jacobson.....	"
30.	Howard Fisher.....	"
31.	George Nelson.....	Peacedale.
36.	Samuel B. Dickens.....	Block Island.
38.	Albert S. Hayes.....	"
39.	Edgar Littlefield.....	"
40.	S. Martin Rose.....	"
42.	Harry B. Hoxsie.....	Westerly.
43.	Albert L. Anderson.....	Block Island.

License No.	Name.	Location.
44.	Herbert Greenwood.....	Westerly.
45.	Gus Anderson.....	Block Island.
46.	John A. Anderson.....	"
47.	William N. Ball.....	"
48.	R. D. Lamb.....	Westerly.
50.	Elmer Babcock.....	Wakefield.
53.	Stannos Janitos.....	Newport.
54.	Park A. Slate.....	Block Island.
55.	Irving T. Latham.....	"
56.	Ralph E. Dodge.....	"
57.	William P. Dodge.....	"
58.	Edward Evensen.....	"
59.	Dimitrios Kodilis.....	Newport.
60.	Millard F. Mitchell.....	Block Island.
61.	Hector McCormick.....	East Providence.
62.	Irving M. Ball.....	Block Island.
63.	Thaddeus A. Ball.....	"
64.	Chester A. Littlefield.....	"
65.	Walter R. Littlefield.....	"
66.	Harold L. Dunn.....	"
67.	Stanton C. Allen.....	Block Island.
68.	Emery A. Dickens.....	"
69.	Joshua P. Smith.....	"
70.	Ulysses E. Westcott.....	"
71.	Abel E. Allen.....	"
72.	Eleazer Allen.....	"
73.	Parker Mitchell.....	"
75.	Barzilla B. Dunn.....	"
76.	John F. Hayes.....	"
77.	Amanuel Allen.....	"
79.	Roswell Mitchell.....	"
80.	Lineas Dodge.....	"
81.	Nicholas Skapanakes.....	Newport.

License No.	Name.	Location.
82.	Lyman Hall.....	Westerly.
83.	Walter Converse.....	Block Island.
84.	Richard Steadman.....	"
85.	Silas C. Hall.....	"
86.	Charles Hall.....	"
87.	Frank M. Gross.....	Prudence Island.
88.	Dimitrios Damacus.....	Newport.
90.	Oscar T. Dykstra.....	Wakefield.
91.	Adrian Dykstra.....	"
92.	Bernal H. Dodge.....	Block Island.
93.	John A. Papa.....	Newport.
94.	George F. Tew.....	"
95.	Andrew J. Tew.....	"
96.	Eugene A. Tew.....	"
97.	Edward Roy.....	"
99.	Peter Andrews.....	"
100.	John Linehan.....	"
101.	Perkiles Booras.....	"
102.	John Conisotas.....	"
103.	Raftikis Raftikis.....	"
104.	Restcom E. Peabody.....	Middletown.
105.	Beck Anderson.....	"
106.	Daniel A. Jordan.....	Apponaug.
107.	Nicholas Alexander.....	Newport.
108.	Anthony Mathinos.....	"
109.	Harry Violet.....	"
111.	John H. Sherman.....	Jamestown.
112.	Jerome Blount.....	Newport.
113.	James P. Hennessey.....	Peacedale.
116.	R. G. Burdick.....	Narragansett Pier.
117.	Nicholas B. Herline.....	Bristol.
119.	Nicholas Trocotas.....	Newport.
120.	George Lathrop.....	Prudence Island.

License No.	Name.	Location.
121.	George A. Carpenter.....	Saunderstown.
122.	R. R. Matterson.....	"
124.	Archie C. H. Matterson.....	"
125.	George Frank.....	Narragansett Pier.
126.	Ernest Littlefield.....	Jamestown.
127.	Thomas F. Nickerson.....	Little Compton.
129.	Constantine Mataronas.....	Newport.
130.	Edgar F. Grinnell.....	"
131.	Anastacio Angelo.....	Newport.
134.	Nicholas Julias.....	"
135.	Lazaras Brown.....	"
136.	Nicholas Mataronas.....	"
137.	Stamox Domotaris.....	"
139.	Frank Parlenas.....	"
140.	John Giones.....	"
141.	John Violet.....	"
143.	George Prokopios.....	"
146.	Richard E. Currie.....	Charlestown.
148.	Adelard Fournier.....	Newport.
150.	Edward N. Lawton.....	"
151.	Nicholas K. Card.....	"
152.	Henry C. Bush.....	Bristol.
153.	Demetrios Giones.....	Newport.
154.	Vasilas Paris.....	"
155.	Benjamin A. Kinnecom.....	Narragansett Pier.
156.	Constantine Conomus.....	Newport.
161.	Angelo Maniotis.....	"
162.	William Holt.....	"
163.	George I. Hargraves.....	Narragansett Pier.
164.	George S. Johnston.....	Block Island.
165.	Stamos Salonikas.....	Newport.
168.	Patrick McCann.....	Bristol.
169.	Roland E. Crowell.....	Conimicut.

License No.	Name.	Location.
170.	Walter Chace.....	Newport.
172.	William H. James.....	"
175.	Domotaris Domotaris.....	"
177.	James E. Roche.....	Westerly.
178.	Jesse E. Crowell.....	Bristol.
179.	Manuel Kristodolo.....	"
180.	Herbert A. Warner.....	"
181.	Marcus L. Huftalen.....	Warren.
182.	Fotis Tregonis.....	Newport.
183.	William C. Allen.....	Narragansett Pier.
184.	Isaac A. Allen.....	"
185.	Edward E. Littlefield.....	Block Island.
187.	Oder S. Dunn.....	"
193.	Irving T. Wilcox.....	Tiverton.
194.	Earl C. Clark.....	Narragansett Pier.
196.	Everett Willis.....	Block Island.
199.	Amanuel Jacobs.....	"
201.	Langworthy H. Pearce, Jr.....	Narragansett Pier.
203.	Joseph Silvia.....	Little Compton.
204.	H. Hillyer Burdick.....	Narragansett Pier.
205.	Walter H. Munro.....	Warren.
209.	Walter Smith.....	Narragansett Pier.
210.	Fred B. Tucker.....	"
211.	Edward D. Taylor.....	"
212.	Floyd Huftalen.....	Warren.
213.	Jared W. Miner.....	Prudence Island.
214.	Manuel Silviera.....	Little Compton.
215.	Frank Brown.....	"
217.	Eldores Sprague.....	Block Island.
218.	Ernest E. Streeter.....	Wakefield.
221.	Freeman Milliken.....	Block Island.
222.	Langworthy H. Pearce.....	Saunderstown.
227.	Arthur J. Beauchamp.....	Newport.

License No.	Name.	Location.
228.	John Taylor.....	Jamestown.
230.	Keriakos Paris.....	Newport.
231.	Antonio R. Medeiros.....	Middletown.
233.	John G. Sousa.....	"
234.	Thomas Mann.....	Narragansett Pier.
235.	Procopios Mataronas.....	Newport.
236.	George Mataronas.....	"
239.	Robert P. Hall.....	Westerly.
241.	Elvin M. Scott.....	"
244.	John Whitford.....	"
245.	Horace E. Sisson.....	"
246.	Asahel B. Larkin.....	"
247.	Adolphas Taylor.....	Narragansett Pier.
249.	Thomas T. Saunders.....	Westerly.
250.	Edward Andrews.....	Wickford.
253.	O. C. Manchester.....	Little Compton.
254.	John Espanolia.....	Newport.
258.	Seabury Mitchell.....	Block Island.
259.	John Hall.....	"
260.	E. M. Slate.....	"
261.	Fred A. Slate.....	"
262.	Harry S. Champlin.....	Narragansett Pier.
263.	Reuben McKenney.....	"
264.	Thomas W. Rhodes.....	"
265.	Joshua G. Champlin.....	"
266.	Henry C. Whaley.....	"
267.	Alvin O. Gould.....	"
268.	Ottowell S. Dodge.....	Block Island.
272.	Conrad Seibel.....	Tiverton.
273.	Henry C. Johnson, 2d.....	Hamilton.
274.	Manuel Mello.....	Little Compton.
275.	John S. Wilcox.....	"
276.	Frank W. Johnson.....	Hamilton



License No.	Name.	Location.
277.	John S. Petritis.....	Jamestown.
278.	Constantine Frank.....	Narragansett Pier.
280.	Alfred Peckham.....	Tiverton.
281.	George A. Martin.....	Newport.
283.	Charles J. Swanson.....	Pawtucket.
284.	Ellis B. Wilbour.....	Little Compton.
285.	William F. Freeborn.....	Portsmouth.
286.	Leman Wardsworth.....	Wickford.
287.	Charles W. Cowles.....	Newport.
288.	Walter W. Weld.....	"
289.	Michael Frank.....	Narragansett Pier.
290.	Joseph C. Silvia.....	Little Compton.
291.	Willard F. Borden.....	Tiverton.
292.	Clarence H. King.....	Jamestown.
293.	John A. James.....	Newport.
294.	George A. Babcock.....	Peacedale.
295.	Nicholas Batilas.....	Newport.
296.	Martin Thompson.....	Prudence Island.
297.	Marcus M. Wilcox.....	Tiverton.
298.	Edward Deconing.....	Bristol.
299.	Albert H. Porter.....	Dutch Island
300.	George E. Harris.....	Jamestown.
301.	Manuel Silva.....	"
302.	Fred J. Buenzle.....	Newport.
303.	Charles G. Galloway.....	"
304.	Benjamin Johnson.....	"
306.	Rudolph Schade.....	Jamestown.
309.	Bernard Murphy.....	Newport.
313.	William P. Briggs.....	Narragansett Pier.
315.	J. B. Urquhart.....	Newport.
315.	John O. Mowat.....	"
316.	Joshua F. Clarke.....	Narragansett Pier.
317.	Harry D. Clarke.....	"

License No.	Name.	Location.
320.	Horace K. Webster.....	Wakefield.
321.	Nicholas Petritis.....	Jamestown.
322.	Arthur L. Bliven.....	Westerly.
323.	William E. Smith.....	Oakland Beach.
324.	Herbert Wilcox.....	Charlestown.
325.	Howard P. Wilcox.....	"
326.	Stephen C. Peckham.....	"
328.	A. S. Dunn.....	Block Island.
329.	Percy R. Brownell.....	Portsmouth.
330.	Thomas P. George.....	Jamestown.
332.	Anthony Axiotes.....	Newport.
333.	Jacques A. Biastre.....	"
336.	Max H. Rubendunst.....	Bristol.
337.	Joseph E. Champlin.....	Charlestown.
338.	Otis Hathaway.....	Block Island.
339.	John Vreira.....	Middletown.
340.	Ebenezer Crowell.....	Conimicut.
343.	Everett A. Ball.....	Block Island.
344.	Patrick H. Dillon.....	Wakefield.
347.	Sidney C. Thomas.....	Portsmouth.
348.	L. C. Luth.....	Newport.
349.	Charles E. Larkin.....	Westerly.
350.	John F. Connell.....	Newport.
351.	George G. Douglass.....	Block Island.
357.	Walter S. H. Bliven.....	Newport.
360.	Edwin W. Nash.....	Watch Hill.
361.	William S. Webster.....	Wakefield.
363.	Lycurgus G. Negus.....	Block Island.
364.	Manuel Ramos.....	Newport.
365.	Arnold James.....	"
366.	Royal B. Tingley.....	Cranston.
367.	J. Attmore Wright.....	Wakefield.
368.	Odessas Booras.....	Newport.

License No.	Name.	Location.
369.	William Christiansen . . . . .	Gooseberry Island.
374.	Edward A. Fitzgerald . . . . .	Wakefield.
376.	Charles A. James . . . . .	Newport.
377.	Alton H. Negus . . . . .	Tiverton.
378.	Edward M. Harvey . . . . .	Portsmouth.
379.	Ernest Andrea . . . . .	Newport.
380.	John Cauldfield . . . . .	Tiverton.
381.	William H. Dickerson . . . . .	Warren.
384.	William E. Tefft . . . . .	Providence.
386.	Leon M. Champlin . . . . .	Narragansett Pier.
387.	Leland O. Jeffers . . . . .	Warren.
388.	Christian Luth . . . . .	Newport.
389.	James Collins . . . . .	"
391.	Joseph Rainey . . . . .	Warren.
392.	Guy Avalone . . . . .	Newport.
393.	Roy Bush . . . . .	Bristol.
394.	Jóseph E. Holloway . . . . .	Richmond.
395.	George E. Hull . . . . .	Warren.
398.	James E. Dewey . . . . .	Block Island.
399.	Henry F. Weaver . . . . .	Newport.
400.	Frank E. Trask . . . . .	Warren.
401.	George L. Hoxsie . . . . .	Newport.
405.	Daniel W. Lasell . . . . .	Narragansett Pier.
407.	Louis Miller . . . . .	Saunderstown.
410.	John Coffinas . . . . .	Newport.
413.	August Weber . . . . .	"
416.	Erik Gustafson . . . . .	Tiverton.
418.	Leroy C. Wilbour . . . . .	Little Compton.
419.	Henry Bannister, Jr. . . . .	Wakefield.
422.	E. A. Larkin . . . . .	"
423.	J. R. Larkin . . . . .	"
424.	Josephine L. Towle . . . . .	"
425.	Anest Vatikitoes . . . . .	Newport.

## FISH-TRAPS, SET IN RHODE ISLAND WATERS.

A table giving the number and distribution of the fish-traps in Rhode Island waters for the past sixteen years is given below.

In this table the following arbitrary divisions have been made for the sake of convenience.

I. *Providence River*.—South to a line joining Warwick Point and Popasquash Point.

II. *Greenwich Bay*.—The West Passage south of Providence River division and north of a line drawn east and west, touching the southern part of Hope Island.

III. *West Passage*.—The West Passage south of the Greenwich Bay division, north of a line drawn due west from Beaver Tail and west of a line connecting the south point of Prudence Island and North Point, Conanicut Island.

IV. *Mount Hope Bay*.—North of Railroad Bridge, Tiverton, and a line connecting Bristol Ferry and Mussel Shoal Light.

V. *East Passage*.—South of Providence and Mount Hope Bay divisions and north of a line from Beaver Tail to Brenton's Point.

VI. *Sakonnet River*.—The Sakonnet River south of Railroad Bridge to a line connecting Flint Point and the Breakwater, Sakonnet Point.

VII. *Off Shore*.—Traps south of above divisions and east of Point Judith, not including those off Block Island.

VIII. *Block Island*.—Traps set off this island.

IX. *Watch Hill*.—Traps set along the mainland of Rhode Island, west of Point Judith.

TABLE VI.

*Table Showing Number and General Distribution of Fish-Traps Since 1898.*

	Providence River.	Greenwich Bay.	West Passage.	Mount Hope Bay.	Sakonnet River.	East Passage.	Off Shore.	Block Island.	Watch Hill.	Total.
1898.....	4	6	26	9	34	15	25	.....	.....	119
1899.....	3	10	23	11	35	15	24	.....	.....	121
1900.....	4	16	24	16	34	12	29	.....	.....	135
1901.....	7	15	24	13	52	14	26	.....	.....	151
1902.....	6	22	27	13	52	14	27	.....	.....	161
1903.....	7	21	32	13	72	16	30	.....	.....	195
1904.....	6	27	33	7	78	14	40	.....	.....	220
1905.....	6	26	33	11	82	20	56	6	.....	240
1906.....	6	35	27	11	80	20	64	6	.....	249
1907.....	7	37	30	12	87	22	70	6	.....	271
1908.....	7	38	32	12	87	22	73	.....	.....	271
1909.....	7	31	32	12	88	26	73	8	.....	277
1910.....	9	29	26	14	92	20	71	8	14	283
1911.....	10	30	20	13	93	21	66	10	14	277
1912.....	10	18	17	12	90	21	68	11	14	261
1913.....	10	18	17	13	92	22	69	11	15	265

## DEEP WATER FISHING OFF NEWPORT, 1913.

In general, the deep water fishing off Newport was not above the average. A noteworthy exception to this was the scup fishing which was far ahead of that of 1912 and has not been equalled in a great many years. The first deep water trap was set off Newport about April 17, although about a week earlier a stub trap was set in shoal water near Price's Neck. Below Point Judith in the Watch Hill District traps were put in the latter part of March. No storms of any consequence were experienced during the best part of the season.

*Scup*.—(*Stenotomus chrysops*).—The first reported catch of scup in Rhode Island waters in 1913 came as usual from traps off Point Judith and consisted of about a bushel. These were brought into Newport on April the 14th. Four days later, April 18, the first of these fish were taken off Newport. The catch of scup reached the "barrel-lot" stage off Point Judith April 20th, and about the same date one firm off Newport caught two barrels. From this time on the number of scup increased rapidly and by May 9th, the usual empounding began. Good catches continued throughout the month of May, and a few were being caught as late as the latter part of June. The main run was over about May 31 and by June 18 there was little shipment except from pounds where thousands of barrels were still retained. The most conspicuous points about the 1913 season were the number of days in which the run continued, the large size of the fish and also the presence of great quantities of small ones. One firm was obliged to dump two traps to get rid of the small scup and thus make room for the market sized ones. An interesting item and one which bears on the question as to where the scup go at the approach of cold weather was the taking of a good sized scup off Jamestown in February and also one at High Hill Point in the Sakonnet River in the month of March. The extent of the run of scup as compared with that of previous years may be seen in Table VII on page 28 of this report.

*Mackerel* (*Scomber scombrus*).—The first catch of mackerel on the Atlantic Coast was made off Chincoteague, Virginia, on April 11. The first in near-by waters were taken in traps off Cuttyhunk on April the 27th. On April 28th, four large ones were taken in traps off Newport. Around May the 5th, large ones running from four to five and one-half pounds each were taken in nearly all places on our shore, but in small lots. May 26th, the first large catch in a trap was made and consisted of 21 barrels. The mackerel season in local waters was very poor. June the 8th seems to have been the record day for shipments from Newport, when twelve thousand mackerel, running about 45 to the barrel, were shipped.

*Tinker Mackerel*, appeared outside in great numbers May 15th.

*Squiteague*.—(*Cynoscion regalis*).—The catch of squiteague or weakfish, in the traps off Newport in 1913 was very poor. The earliest reported was made on April 23rd in the scup traps but not until May 14th in the traps off Third Beach, Newport. The best catches were made about June 23rd, although no large catches were made this year. A comparison with other years will be seen in Table X on page 29.

*Butterfish* (*Poronotus tricanthus*).—A few butterfish were caught around April 22nd, mixed in with other fish. The large run however did not occur until considerable later. The first big catch of the season occurring June 3rd. There were large quantities of small fish all through the season. For the comparison of the first appearance for a number of years of these fish and others mentioned below see Table XI on page 30.

*Striped Bass* (*Roccus lineatus*).—The first catch of striped bass in Rhode Island waters in 1913 was on April 14th. By the 21st of April the catches had increased to barrel lots. Some large catches were made the first of November, when one day's haul amounted to eleven thousand pounds. Good average catches were made by all. One factor of the season was the large catch of these fish by the Gray Brothers as far up as Prudence Island, a greater distance inland than these fish have been caught in recent years.

*Sea Bass* (*Centropristes striatus*).—Sea bass were first taken in the traps on April 26th. The majority of these fish taken during the season were unusually large.

*Sea Robins* (*Prionotus carolinus*).—There were not enough of these fish caught to supply the demands of the market and the majority were small. The first catch was on April 26th.

*Squid*.—The demand for this species of mollusk was very poor, and the catch was nothing extra. They were first noticed in the traps about April 23rd, and at that time were exceptionally large, some measuring eighteen inches in length.

The first *Swordfish* was captured on June the 18th.

On May 7th a *Drumfish* (*Pogonias cromis*) which is quite rare in these waters was caught in the traps.

April 16th, four barrels of young *Pollock* were caught off the Training Station at Newport. This is farther inland than these fish usually come.

TABLE VII.

*Calendar of Scup Season off Newport, 1906-1913.*

	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.
First appearance...	April 20.	May 2.	April 23.	April 19.	April 24.	April 26.	April 24.	April 14.
Run commences...	May 1.	May 10.	April 29.	May 1.	May 8.	May 12.	May 1.	April 25.
Run ends.....	June 15.	June 24.	June 9.	June 14.	June 22.	June 20.	June 10.	June 18.
Most abundant...	May 5 to June 4.	May 21 to June 10.	April 29 to June 1.	May 10 to June 7.	May 13 to June 5.	May 14 to June 1.	May 14 to June 1.	April 29 to May 31.

TABLE VIII.

*Calendar of Mackerel Season off Newport, 1906-1913.*

	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.
First caught in trap.	May 4.	May 2.	April 27.	April 17.	April 23.	May 6.	May 3.	April 28.
First large shipment from Newport...	May 14.	May 17.	May 14.	May 4.	May 16.	May 27.	May 22.	May 26.
Most abundant...	June 4 to June 30.	June 11 to July 5.	May 25 to July 1.	May 16 to July 1.	May 16 to July 25.	May 27 to June 21.	May 22 to June 20.	May 26 to June 20.
Record day.....	June 4.	July 1.	June 20.	May 24.	June 10.	May 27.	June 12.	June 8.
Season ends at New- port.....	Near end of July.	Near end of July.	Near end of July.	Near middle of July.	Near end of July.	Near Aug. 1.	Near end of July.	July 29.



TABLE IX.

*Appearance of Tinker Mackerel, 1905-1913.*

YEAR.	First Appearance.
1905.....	June 25.
1906.....	June 4.
1907.....	June 10.
1908.....	May 27.
1909.....	June 17.
1910.....	July 1.
1911.....	July 15.
1912.....	June 10.
1913.....	May 15.

TABLE X.

*Catch of Squiteague in Scup Traps off Newport, 1906-1913.*

	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.
"Stragglers" first appearance.....	May 4.	May 21.	May 7.	May 19.	April 9.	May 15.	May 13.	April 22.
Commencement of "run".....	June 10.	June 20.	June 6.	June 17.	June 20.	June 15.	June 7.	June 23.

TABLE XI.

*First Appearance of Various Marketable Fish in Traps off Newport, 1906-1913.*

	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.
Butterfish.....	April 16.	May 10.	April 28.	April 21.	April 22.	May 2.	May 21.	April 22.
Horse-mackerel. ....			June 25.	June 17.	July 16.	July 15.		July 18.
King Fish.....			May 8.	May 4.	May 4.	May 13.	May 10.	May 6.
Mackerel.....	May 4.	May 2.	April 27.	April 17.	April 23.	May 6.	May 3.	April 28.
Sea Bass.....		May 8.	May 5.	May 4.	May 1.	May 4.	April 30.	April 25.
Sea Robins.....	April 30.	May 9.	April 27.	May 1.	April 21.	April 27.	April 24.	April 26.
Scup.....	April 20.	May 2.	April 23.	April 19.	April 24.	April 26.	April 24.	April 14.
Squid.....	May 4.	May 10.	April 27.	May 1.	April 20.	April 28.	May 1.	April 23.
Squeteague.....	May 4.	May 21.	May 7.	May 19.	April 9.	May 13.	May 13.	April 22.
Striped Bass.....	April 31.	May 16.	April 24.	April 21.	April 20.	April 22.	April 24.	April 13.

## TUNA FISHING.

For more than a year your Commission has considered the possibility of developing the tuna fishing off Block Island. No one who has witnessed in the latter part of the summer off Block Island the magnificent leaps of the fish locally called the horse-mackerel can doubt its identity with the famous leaping tuna of Southern California. Not alone an identity of species, which is easily established, but also an identity in game qualities. For there the fish leaps in pursuit of the flying fish, while here, the fish which is pursued rarely if ever leaves the water even when closely pressed. To such an extent has this idea of the importance of the tuna fishery near Block Island grown in the minds of your Commissioners that this past summer investigations were begun as a result of which it is confidently expected that this year the initial steps will be taken in the establishment of such a fishery. This industry brings thousands of dollars each year to Catalina Island, in California, and why not here where conditions are similar? In order that the possibilities lying at our door may be known some facts which were brought out in the investigation are here given.

## THE TUNA

This famous game fish of the mackerel family is known along the Atlantic seaboard as the horse-mackerel, on the Pacific Coast, as the leaping tuna, and to scientists as *Thunnus thynnus*, tunny, or tuna fish.

In New England waters, particularly at Block Island, this fish has in the past two or three years attained considerable prominence not only as a food fish for the markets, but as a game fish for the ardent sportsman who enjoys the taking of large fish with the lightest possible tackle.

For the past five years these fish have been fairly plentiful at Block Island and vicinity. While many specimens have been taken in traps and by harpoon that have weighed upwards of six hundred pounds each, the average weight is much less. Large numbers have been caught with hook and line during the past two seasons weighing from fifteen to seventy-five pounds each. Nearly all of these fish have been taken by the native Block Island fishermen and have been caught with wood jigs painted with aluminum and attached to stout hand lines. It is the smaller sizes only that are caught with hand lines, it being almost impossible to handle the large sizes without breaking either line or jig or tearing the mouth of the fish. The method of capturing the large sizes with harpoon is by "chumming" around the boat with small fish and pieces of fish until a large Tuna, attracted by the bait, ventures sufficiently near to be harpooned in the same manner as the swordfish.

During the past season the price paid in the markets for the Tuna or horse mackerel has been sufficiently remunerative to induce the hand-line fishermen to devote a large proportion of their time to this industry. At four to five cents per pound, which has been the average market price, the smaller sizes would average more than one dollar each and while the fish were running, twenty-five fish per day to a boat has been no unusual catch.

As a game fish the fame of the Tuna has spread throughout the world. At Catalina Island, on the California Coast, large hotels

are supported, hundreds of fishermen with their boats are annually employed by the army of sportsmen who visit the island each year for the purpose of angling for the Tuna and other smaller game fishes, with rod and reel and light tackle. So popular has the sport become that the boatmen do no fishing themselves, and will not permit a hand-line to be used from their boats.

In the year 1898 the fishing for the Leaping Tuna (so named on account of its high leaps when pursuing its prey, the flying fish), resulted in the formation by many of the leading sportsmen of this country and Europe, of the Tuna Club, with headquarters and beautiful club house at Avalon, Catalina Island. With its motto, "fair play to game fishes" strictly lived up to, this club has by precept and example, established a high standard of sport, not only at Catalina Island, but all over this country. Its tournaments have been participated in by enthusiasts from Maine to California, who have gladly accepted the rules and regulations laid down by the club, restricting the size and weight of rods and length and caliber of line. Valuable prizes are offered at these annual tournaments, thereby increasing the interest in sea angling and adding to the membership of the club.

Your Commission believes that what has been accomplished in California may, in a measure at least, be done in Rhode Island. The Tuna are here in large numbers. The shoals in the vicinity of Block Island and Point Judith appear to furnish natural feeding grounds for the immense schools of the fish that congregate there during the months of early autumn. The hand-line fishermen have proven beyond doubt their readiness to rise to the bait. Surely the Tuna will not refuse the same bait simply because the line is attached to rod and reel instead of being held in the hand. As a matter of fact, though not generally known, several Rhode Island sportsmen and even one or two from more remote points have tried them out with rod and reel with sufficient measure of success to demonstrate that with proper tackle and equipment, experienced boatmen, and some practical experience, the sport should be in every way equal to that in California waters. That interest in the sport is

growing is evidenced by many inquiries received by this Commission during the past season from sportsmen living in other states as well as Rhode Island. If this interest can be maintained and increased and the sport popularized to the extent of inducing the Tuna fishermen to visit our shores, an entirely new source of income for our native fishermen and boatmen should result. Thousands of dollars are annually paid to the boatmen of Catalina Island, and many more thousands paid to the proprietors of hotels and vendors of supplies and fishing tackle.

As evidence of the magnitude of this industry from a commercial standpoint we append a statement furnished by Mr. Andrew V. Willis, Deputy Lobster Commissioner at Block Island.

BLOCK ISLAND, January 12, 1914.

MR. CHARLES W. WILLARD,

*President, Commission of Inland Fisheries,*

*Westerly, R. I.*

DEAR SIR:— . . . (In regard to) the report on Tuna fishing at Block Island that you asked me to look up and send to you, would say, that it has been quite a job to get the true account, but at last I think I have it and am sending it to you according to the best of my knowledge and (that of) the best Tuna fishermen here.

From the 25th of July to 20th of October, 10,000 were caught by hook and line, averaging from 15 to 30 lbs. In (the) same period 500 in traps, averaging 500 to 800 lbs., and caught with swordfish iron around 150 from September 10th to October 10, averaging from 400 to 900 lbs.

This report is verified by,

Rep. H. K. LITTLEFIELD,  
N. B. ROSE, *Tuna Fisherman*,  
M. S. BARBER, *Tuna Fisherman*.

Yours very truly,

(Signed) ANDREW V. WILLIS,  
*Deputy Lobster Commissioner.*

Your Commission believes that the sportsmen of the United States should be told of the possibilities suggested by the facts above enumerated, and that it is the duty of the Rhode Island Commission to encourage and foster this possible new industry for the citizens of the State.

Another phase of this same industry is the possibility of more effectually preparing the products of this fishery for the market. In California as may be seen from the following quotation from an article written by Mr. Wiseman for the Fishing Gazette, there is a very considerable industry established in canning tuna.

“Perhaps at no time in the history of the fish business has a new canned fish met with such instant public favor, in so comparatively short a time, as has tuna fish. Considering the very little advertising that has been done by the Pacific Coast packers, it is really remarkable the rapid growth the industry has enjoyed. The deliciousness and the wholesomeness, together with its economical features (packed without skin, bones or water), has in a great measure been the cause of its popularity, and the advertising has been done mainly by word of mouth.

“The industry is in reality about three years old, although tuna was put up ten years ago, but was not forced on the market, owing to many objectionable features which had to be eliminated in order to produce a finished palatable product. The principal objection was an excess of fish oil, which at that time they had no knowledge of a process for removing. This has been overcome, however, and now 95 per cent. of the fish oil is extracted before the product goes into the cans.

“The American tuna fish must not be confused with the Italian tunny, caught in the Mediterranean Sea, which possibly belongs to the same family, but weighs on an average of 1,000 pounds, so naturally is a tougher, darker, coarser-grained meat, resembling veal, while the American tuna resembles more the white meat of chicken.

“The tuna caught on the Pacific Coast belongs to the mackerel family, and the average weight is about 30 or 35 lbs. There are four species of tuna which inhabit the waters of the Pacific Coast, principally north of San Diego and south of Santa Barbara, between the Cal-

ifornia mainland and Catalina Island. This seems to form a basin in which they live from May until the later part of November, due, no doubt, to the even temperature of the water. After they leave these waters we have no definite knowledge as to their whereabouts.

"The four varieties are known as the Leaping Tuna, Bonita, Skipjack and Albacore, the latter being the one preferred by the packers, owing to the tenderness and larger quantity of white meat. The name Albacore is derived from two Latin words, Alba (White), and Cor (Heart). Though if the four above-mentioned fish were of even size and laid side by side, no one but the experienced could denote any particular difference. There is very little difference in the shape, but the fin of the Albacore is blue, while the Leaping Tuna has a yellow fin.

"The Leaping Tuna has probably done more to make Catalina Island famous as a resort than anything else. Anglers from all over the world visit Catalina to fish for tuna. The fish is an unusually game one, and the tuna clubs offer a gold button to the angler who catches a 20-lb. or larger tuna, on a regulation rod and reel. The possessors of these buttons are not numerous, and it is considered an honor to own one of them, at least it is so considered by men who enjoy fishing for tuna. Flying fish is preferred as a bait by tuna anglers.

"This brings me to the subject of baiting for tuna. We have no known fish in these waters that are more particular as to their eating. They are not scavengers in the slightest sense of the word, but, on the contrary, are unusually particular regarding their diet. They prefer sardines, small mackerel, herring and anchovy. This must be live bait, nothing dead will tempt them. The tuna boats are therefore all equipped to carry live bait, and, although fishermen sometimes school the fish by attracting their attention with cornmeal, all of the tuna that is caught for the tuna canneries of the Pacific Coast is caught with hook, line and live bait.

"Up to this time the Japanese have rather monopolized the fishing end of the industry. I know of no reason why this should be so, as any thrifty fisherman of any other nationality would receive considerable encouragement from the tuna packers, if he cared to come into this lucrative field. It is nothing unusual for one of these fishing boats to bring in five or six thousand pounds of tuna after fishing several hours.

"The fish are all cleaned at sea, heads severed and entrails removed, then they are brought to the cannery, and are ready for the first cooking, which takes place immediately. During this process of cooking the fish is deprived of the objectionable fish oil. After this cooking the skin, bones and dark meat are removed, being used in the manufacture of fertilizer, yielding about seven units of organic nitrogen. The second cooking is required to complete the process, this being done after the tuna is sealed in the cans.

"For the buyers of tuna fish who are not so familiar with the proper appearance of a perfect pack, it might be well to add that a pure olive oil pack has not met with the same degree of approval as a blend of salad and olive oils. The straight olive oil pack seems to have a tendency to grow stronger with age, which has not been the case with blended oils.

"This pack should be a solid pack of large chunks of white meat only, without an excess of oils, but with the proper amount to saturate a given quantity of fish. A pinkish cast to the contents is quite an objection, inasmuch as it shows a presence of blood, due to improper drainage and cooking. A certain amount of salt is necessary for seasoning, but this could be very easily overdone and requires extra care in packing.

"Tuna fish has a distinct place of its own, and is not a substitute for salmon, or any other fish. On the contrary, being a game fish of superior quality, we predict it is destined to be known in all the markets of the world."

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### ENFORCEMENT OF STATE LAWS.

Four deputies were employed in 1913 to enforce the lobster laws. Two for the entire year, and two additional ones stationed at Block Island during the open season.

The following prosecution was made and fine imposed and paid under the lobster laws (the names of those fined are omitted):

Newport, June 21, 46 short lobsters. . . . 20 lobsters. . . . . \$100.00  
 (Suspended sentence on 26 lobsters.)



In the enforcement of the laws relating to the fresh-water fisheries, your Commission has employed a number of deputies in various sections of the State who serve without compensation.

The general fisheries laws of the State are in an almost hopeless tangle. Beginning in the early part of the eighteenth century for two hundred years laws have been enacted seeking to correct local and often temporary conditions. Later, the greater part of these were repealed and replaced by others. Some however were not repealed, but rendered ineffective through the passage of other and different laws relating to the same subject. In many causes it is doubtful if convictions could be obtained from laws existing on our statute books today. It is the sincere desire of this Commission that at some early date these laws may be thoroughly overhauled.

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### BIOLOGICAL RECORDS.

Physical and Biological records of various kinds have been continued at the Wickford Hatchery and Experiment Station.

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### AN EXHIBIT OF SEA FARMING.

Under the above heading your Commission prepared as in years past an exhibit of marine and fresh-water fishes at the Washington County Fair which was viewed as usual by large crowds. The expenses of operating this exhibit is borne almost entirely by the Agricultural Society, and inasmuch as it furnishes a means of interesting a large number of people in the fisheries of the State your Commission has readily assented to continue it.

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### CO-OPERATION WITH FISHERIES AUTHORITIES.

In accord with the duties as prescribed by the General Assembly, your Commission has been in touch with the fisheries boards both

in this country and abroad and occasion is here taken to thankfully acknowledge the courtesies received.

The meeting of the American Fisheries Society in Boston was attended by the members of your Commission. Two of their number were elected to important offices.

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### THE PROPAGATION OF LOBSTERS AT THE WICKFORD HATCHERY AND EXPERIMENT STATION.

The lobster rearing at Wickford in 1913 in point of numbers was not as successful as in the previous year owing to the lack of egg lobsters during the rearing season. The unusually warm winter had caused the eggs to hatch before the egg lobsters were taken which resulted in a fewer number of spawners in the earlier part of the year. No unusual features are to be noted in reporting on the season's work, although it should be stated that all the fry were reared beyond the fourth stage before they were liberated. The season opened May 31st, and closed in the earlier part of August.

TABLE XII.

*Total Number of Fourth and Fifth Stage Lobsters Reared Each Year Since 1900.*

YEAR.	IV.	V.
1900.....	3,425 .....	
1901.....	8,974 .....	
1902.....	27,300 .....	
1903.....	13,500 .....	
1904.....	50,597 .....	
1905.....	103,572 .....	
1906.....	189,384 .....	24,800
1907.....	294,896 .....	4,900
1908.....	322,672 .....	5,481
1909.....	178,542 .....	
1910.....	511,274 .....	28,372
1911.....	*299,042 .....	
1912.....	*521,861 .....	
1913.....	*469,344 .....	
Total.....	2,986,383	63,553

\*The entire number of lobsters liberated in 1911, 1912 and 1913 were in the latter part of the fourth stage and beyond.

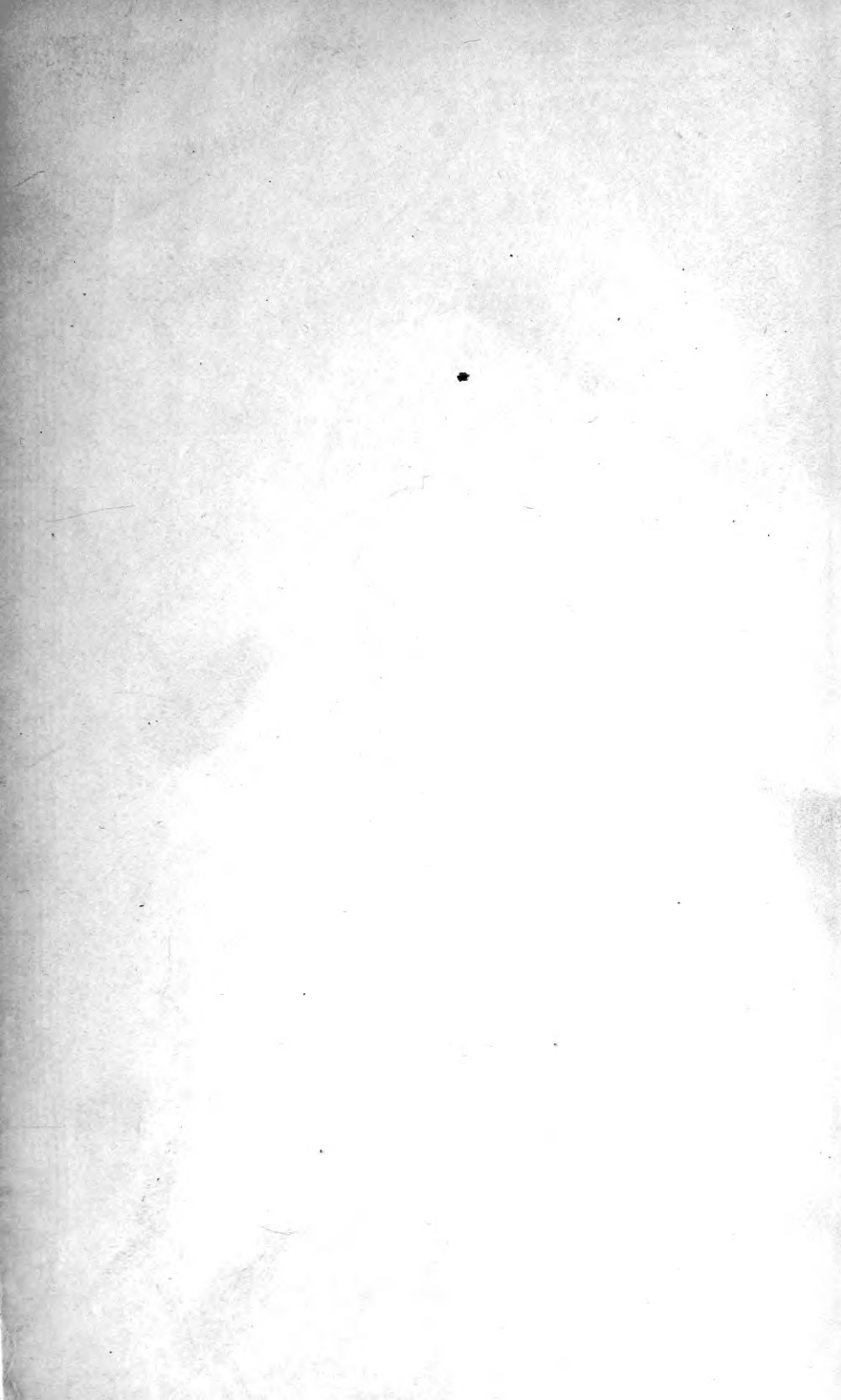
# TITLES OF SPECIAL PAPERS PUBLISHED IN THE ANNUAL REPORTS OF THE COMMISSIONERS OF INLAND FISHERIES OF THE STATE OF RHODE ISLAND.

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1. MEAD, A. D. The Starfish. (First paper.) Twenty-eighth Annual Report. 1898.
2. MEAD, A. D. The Starfish. (Second paper.) Twenty-ninth Annual Report. 1899.
3. TOWER, R. W. Improvements in the Methods of Preparation of Fish for Shipment. Twenty-ninth Annual Report. 1899.
4. BUMPUS, H. C. The Extension of the Commercial Fisheries of the State. Twenty-ninth Annual Report. 1899.
5. KELLOG, J. L. The Life History of the Common Clam. Twenty-ninth Annual Report. 1899.
6. MASON, N. R. A List of the Diatoms Found in the Water over the Clam, Mussel, and Oyster Beds in Narragansett Bay. Thirtieth Annual Report. 1900.
7. MEAD, A. D. Observations on the Soft-shell Clam. Thirtieth Annual Report. 1900.
8. MEAD, A. D. Observations on the Soft-shell Clam. (Second paper.) Thirty-first Annual Report. 1901.
9. RISSER, J. R. Habits and Life History of the Scallop. Thirty-first Annual Report. 1901.
10. MEAD, A. D. Habits and Growth of Young Lobsters and Experiments in Lobster Culture. Thirty-first Annual Report. 1901.
11. MEAD, A. D. Observations on the Soft-shell Clam. (Third paper.) Thirty-second Annual Report. 1902.
12. MEAD, A. D. Habits and Growth of Young Lobsters and Experiments in Lobster Culture. (Second paper.) Thirty-second Annual Report. 1902.
13. MEAD, A. D. and WILLIAMS, L. W. Habits and Growth of the Lobster and Experiments in Lobster Culture. (Third paper.) Thirty-third Annual Report. 1903.
14. MEAD, A. D. and BARNES, E. W. Observations on the Soft-shell Clam. (Fourth paper.) Thirty-third Annual Report. 1903.
15. MEAD, A. D. and BARNES, E. W. Observations on the Soft-shell Clam. (Fifth paper.) Thirty-fourth Annual Report. 1904.
16. BARNES, E. W. Preliminary Inquiry into the Natural History of the Paddler Crab (*Callinectes hastatus*) with Remarks on the Soft-shell Crab Industry of Rhode Island. Thirty-fourth Annual Report. 1904.
17. MEAD, A. D. Experiments in Lobster Culture. (Fourth paper.) Thirty-fourth Annual Report. 1904.
18. MEAD, A. D. Experiments in Lobster Culture. (Fifth paper.) Thirty-fifth Annual Report. 1905.
19. HADLEY, P. B. Changes in Form and Color in Successive Stages of the American Lobster. Thirty-fifth Annual Report. 1905.
20. EMMEL, V. E. The Regeneration of Lost Parts in the Lobster. Thirty-fifth Annual Report. 1905.
21. TRACY, H. C. A List of the Fishes of Rhode Island. Plates I-XII. Thirty-sixth Annual Report. 1906.
22. TRACY, H. C. The Common Fishes of the Herring Family. Plates VII-XII. Thirty-sixth Annual Report. 1906.

23. BARNES, E. W. Methods of Protecting and Propagating the Lobster, with a Brief Outline of its Natural History. Plates XIII-XXVI and XXVIII, XXXI, XXXII, XXXVI. Thirty-sixth Annual Report. 1906.
24. HADLEY, P. B. Regarding the Rate of Growth of the American Lobster. Plates XXVI-XXXVII, and XL. Thirty-sixth Annual Report. 1906.
25. HADLEY, P. B. Observations on Some Influences of Light upon the Larval and Early Adolescent Stage of *Homarus Americanus*. Plates XXXVIII-XL. Thirty-sixth Annual Report. 1906.
26. EMMEL, V. E. The Relation of Regeneration to the Molting Process in the Lobster. Plates XL-XLI. Thirty-sixth Annual Report. 1906.
27. TRACY, H. C. The Fishes of Rhode Island, III. The Fishes of the Mackerel Family. Thirty-seventh Annual Report, 1907.
28. TRACY, H. C. A List of Rare Fishes taken in Rhode Island in the year 1906. Thirty-seventh Annual Report, 1907.
29. WILLIAMS, DR. LEONARD W. List of the Rhode Island Copepoda, Phyllopoda, and Ostracoda, with new species of Copepoda. Thirty-seventh Annual Report. 1907.
30. EMMEL, V. E. Regenerated and Abnormal Appendages in the Lobster. Thirty-seventh Annual Report. 1907.
31. WILLIAMS, L. W. The Stomach of the Lobster and the Food of Larval Lobsters. Thirty-seventh Annual Report. 1907.
32. HADLEY, P. B. Regarding the Behavior of the Larval and Early Adolescent Stages of the American Lobster. Thirty-seventh Annual Report. 1907.
33. BARNES, E. W. Lobster Culture at Wickford, Rhode Island, in 1906. Thirty-seventh Annual Report. 1907.
34. BARNES, E. W. Lobster Culture at Wickford, Rhode Island, in 1907. Thirty-eighth Annual Report. 1908.
35. TRACY, H. C. The Fishes of Rhode Island, V. The Flatfishes. Thirty-eighth Annual Report. 1908.
36. TRACY, H. C. The Fishes of Rhode Island, VI. A Description of two young Specimens of Squeteague (*Cynoscion regalis*), with Notes on the Rate of their Growth. Thirty-eighth Annual Report. 1908.
37. EMMEL, V. E. The Problem of Feeding in Artificial Lobster Culture. Thirty-eighth Annual Report. 1908.
38. TRACY, H. C. The Fishes of Rhode Island, VII. The Life History of the Common Eel. Thirty-ninth Annual Report. 1909.
39. SULLIVAN, W. E. Notes on the Crabs Found in Narragansett Bay. Thirty-ninth Annual Report. 1909.
40. MEAD, A. D. A Method of Fish Culture and of Transporting Live Fishes. Thirty-ninth Annual Report. 1909. (Paper Presented Before the Fourth International Fishery Congress, Washington, 1908.)
41. MEAD, A. D. A Method of Lobster Culture. Thirty-ninth Annual Report. 1909. (Paper Presented Before the International Fishery Congress, Washington, 1909.)
42. TRACY, H. C. Annotated List of Fishes Known to Inhabit the Waters of Rhode Island. Fortieth Annual Report. 1910.
43. BARNES, E. W. Notes on the Spring and Summer Fishing in Deep Water off Newport During the Years 1905-1909. Fortieth Annual Report. 1910.
44. BARNES, E. W. The Plague of Sea Clams at Easton's Beach, Newport. Fortieth Annual Report. 1910.
45. HADLEY, P. B. Additional Notes Upon the Development of the Lobster. Fortieth Annual Report. 1910.
46. BARNES, E. W. Revised Edition of Methods of Protecting and Propagating the Lobster with a Brief Outline of its Natural History. Plates IV-XXIV. Forty-first Annual Report. 1911.











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